Scientific Abstract

Autologous bone marrow transplantation (AuBMT) is becoming an increasingly common procedure for patients with acute leukemia. The main cause of treatment failure in AuBMT is disease relapse but the source of leukemic cells responsible for relapse is unknown. Relapse may result from leukemic cells in the transplanted marrow, insufficient conditioning (i.e. leukemic cells survive the BMT ablative regimen), or both. Identifying the factors leading to disease recurrence after AuBMT will help direct future treatment strategies.

The purpose of this protocol is to determine if leukemic cells in the transplanted marrow are responsible, at least in part, for disease recurrence in relapsed patients. Patients will acute leukemic who are to undergo AuBMT may participate. A portion of their remission marrow (10%-30%), obtained at the time of harvest, will be exposed to the LNL6 retroviral vector. The LNL6 vector is packaged in the PA317 packaging cell line and will be supplied from the same source as the LNL6 vector used in the TIL-N2 human gene transfer protocol. Marked and untreated marrow will be stored until the time of transplant, then infused using standard transplantation procedures. Patients will be periodically monitored for evidence of the LNL6 vector in peripheral blood and bone marrow cells. If patients relapse, leukemic cells will be studied to determine if they contain the LNL6 vector. Further studies will be performed in an attempt to determine the percentage of leukemic cells with the LNL6 vector and the clonality of the marked cells.

In addition to evaluating the transfer of LNL6 to bone marrow and leukemic cells, patients will also be studied for evidence of treatment toxicity, such as inadvertent exposure to replication-competent murine retrovirus.